Name: _____

Patterning and Algebra Test Review

Our Patterning and Algebra Test is on: _____

THINGS TO KNOW

If you are unsure about any concepts, star them. Make sure to review all concepts before the test, and check off the items you have completed once you have reviewed them.

☐ How to find the nth term of a pattern using a table of values (term number and term value)

☐ How to determine the pattern rule/ algebraic equation of a linear pattern (using magic number, adjustment number or similar strategy)

☐ How to determine the pattern rule/ algebraic equation of a non-linear pattern (exponential or square root)

☐ How to use a pattern rule to find the nth term (e.g. what is the term value when n = 20?)

☐ How to identify linear vs. non-linear patterns using a table of values or graph

☐ Graphing patterns

☐ Solving equations algebraically

☐ Using patterns and algebra to solve real-world problems

TYPES OF QUESTIONS

a) Technique questions
b) Communication questions
c) Application questions
d) Thinking questions

HOW TO STUDY

To be successful on any math test, you need to take time to not only review the concepts, but also practice technique, communication and application problems. It is not enough to just read over your notes! Look at the types of questions above, and make sure that you can communicate and apply concepts and think of creative solutions.

To study, you should:

• Read everything that will be on the test using this sheet
• Make sure that you have all of the lesson notes and collect the ones that you are missing
• Review all the lesson notes, and <u>make a study shee</u>t that synthesizes all the important concepts (this will be handed in on the day of the test)
• Complete the unit review
• Come for extra help at recess if you need it

Name: _____

Patterning and AlgebraTest Review: Practice

A) TECHNIQUE
1) For the patterns below:

      a) Complete a table of values
      b) Determine the pattern rule (the nth term)
      c) Solve for n = 35

The first pattern has included the table of values chart for you.

i) 10, 13, 16, 19 ...

Term number (n)	1	2	3	4	5	6
Term value						
Pattern Magic Number:	**Pattern Adjustment Number:**			**Pattern's Algebraic Equation (Rule):**		

n = 35:

ii) -2, -4, -6, -8 ...

iii) -1/2, 0, 1/2, 1 ...

iv) 2, 5, 10, 17 ...

Name: _____

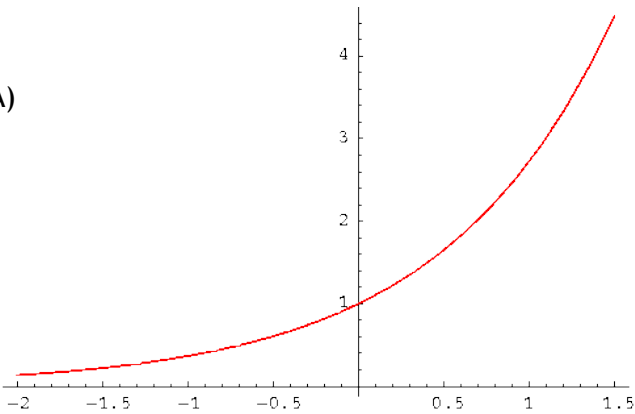**2) Solve for the unknown variable (letter):**

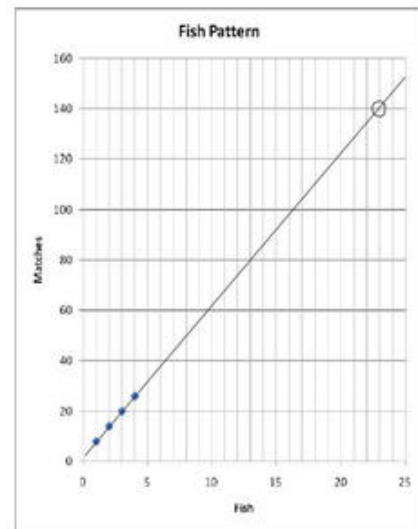a) $3a + 7 = 19$

b) $15 = \dfrac{x}{2}$

c) $4y - 7 = 5 + y$

B) COMMUNICATION

3) Look at the graphs below. Explain which graph is linear and which is non-linear, and how you know. How would you find the pattern rule of each?
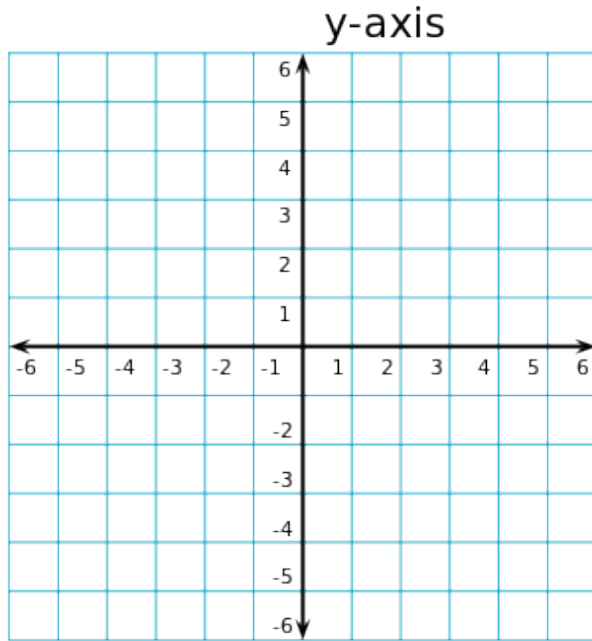
A)

B)

Name: _____

C) APPLICATION
4) a. Plot the points in the following table on the graph below:

x	-3	-2	-1	0	1	2	3
y	-6	-4	-2	0	2	4	6
(x,y)	$(-3,-6)$	$(-2,-4)$	$(-1,-2)$	$(0,0)$	$(1,2)$	$(2,4)$	$(3,6)$

y-axis

x-axis

b. Describe the pattern in words.

c. State the next point in the pattern.

d. State the pattern rule.

5) For each of the problems below, firs display the equation, then solve for *x*.

a) One less than two time a number is equal to three more than that number. Let *x* represent the number.

b) Five times a number is equal to two more than three times the number. Let *x* represent the number.

Name: _____

D) THINKING

6) Here are two number patterns:

1, 2, 9, 16, 25   **4, 8, 16, 32, 64**

Does the number 512 appear in either pattern? Both patterns? Justify your answer.

7) Kristin is holding a skating party. The rental of the ice is $75, plus $3 per skater.

a) Write an expression for the cost in dollars for *n* skaters (pattern rule).

b) Use the expression to find the total cost for 25 skaters.

c) If Kristin has a budget of $204, how many people can she invite to skate? Solve the problem using an algebraic equation. Justify your answer.

Hint: Your equation will start with 204 = [pattern rule]. What variable will you be solving for?